Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID R. DETTMER

Appeal No. 2000-1572
Application No. 08/699,844[1]

ON BRIEF

Before DIXON, GROSS and SAADAT, Administrative Patent Judges.
SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1, 2, 4, 7-9 and 20-37, which are all of the claims pending in this application.

We affirm-in-part.

BACKGROUND

Appellant's invention is directed to a duplex portable handset speakerphone and its method of operating. A microprocessor controls gain levels in the speech paths corresponding to the microphone and the speaker to avoid the

[1] Application for patent filed August 20, 1996.

unwanted acoustic feedback sound (specification, page 4). The microprocessor further determines the peak signal levels corresponding to both speech paths, compares the peak signal levels to pre-defined threshold levels, and adjusts each of the microphone and speaker gains accordingly (specification, page 5).

Representative independent claims 1 and 20 are reproduced as follows:

1. A duplex portable handset speakerphone, comprising:

a microprocessor;

a hands-free receive register coupled to the microprocessor;

a hands-free transmit register coupled to the microprocessor;

a memory circuit having an algorithm executable by the microprocessor for operating the speakerphone;

a first analog-to-digital converter coupled to the hands-free receive register;

a second analog-to-digital converter coupled to the hands-free transmit register;

a first programmable digital attenuator in a speech path and coupled to the microprocessor and to a speaker;

a second programmable digital attenuator in another speech path and coupled connected to the microprocessor and to a microphone;

wherein the microprocessor determines peak volume levels in both speech paths and adjusts gain levels in the speech paths in response to the peak volume levels.

20. A method of controlling an audio signal level in a portable communications device, comprising the steps of:

a. providing a signal path having an audio information signal;

b. providing a microprocessor connected to said signal path;

c. providing a memory device connected to said microprocessor, wherein said memory device includes a control algorithm stored therein which contains noise threshold information associated with said audio information signal;

d. monitoring said audio information signal to determine a peak signal level for said audio information signal;

e. comparing said peak signal level to said stored noise threshold information; and

f. adjusting the amplitude of said audio information signal when said amplitude is greater than said noise threshold information.

The references relied on by the Examiner in rejecting the claims are:

Odhams GB 2 174 578 A Nov. 5, 1986
(Published British Patent Application)

Karnowski et al. (Karnowski) 5,768,364 Jun. 16, 1998
(effective filing date May 31, 1995)

Claims 1, 2, 4, 7-9 and 20-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Odhams in view of Karnowski.

We note that claim 2 was also rejected under the second paragraph of 35 U.S.C. § 112 as set forth in the final rejection (Paper No. 16; mailed December 29, 1998). The Examiner indicates that this ground of rejection is withdrawn (answer, page 3) in view of the entry of the after final amendment filed on March 29, 1999 (paper No. 17).

Rather than reiterate the viewpoints of the Examiner and Appellant, we refer to the answer (Paper No. 24; mailed November 24, 1999) for the Examiner's complete reasoning in support of the rejection and to the brief (Paper No. 22; filed August 30, 1999) for Appellant's arguments thereagainst.

OPINION

With respect to independent claim 1, Appellant indicates that the invention "generally refers to a duplex portable handset speakerphone that is capable of achieving full duplex communication without digital signal processing" (brief, page 7). Appellant argues that Odhams does not determine peak volume levels in both speech paths while Karnowski's half-duplex speakerphone monitors and attenuates only one of the audio

signals at a time (brief, page 8). Appellant acknowledges Karnowski's discussion of peak detection, but indicates that the teachings related to "the use of the microprocessor to determine peak volume levels ... and to adjust gain level in response to the peak volume levels" are missing in both Odhams and Karnowski (id.). Additionally, Appellant contests the Examiner's reason for combining Odhams and Karnowski and asserts that the combination would not have been obvious since peak volume levels are not discussed in relation with Odhams (brief, page 9).

The Examiner responds to Appellant's arguments by pointing out that Odhams teaches the use of a microprocessor for detecting and comparing speech gain levels while Karnowski provides for monitoring and determining peak levels of audio signals using a software-controlled microprocessor (answer, pages 8 & 9). Additionally, the Examiner relies on supplying "the needed function of signal level detection using a type of measurement in a well known manner," as the reason for combining Odhams and Karnowski (answer, page 9).

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). Ashland Oil, Inc. v. Delta Resins &

Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985). The Examiner is also expected to make the factual determination set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a motivation or reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. See also In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). Our reviewing court requires this evidence in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); In re Cofer, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966).

Additionally, the Federal Circuit states that motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). However, "the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." In re Lee, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).

Our review of Odhams reveals that the reference relates to a hands-free telephone that compares the digital signal from two speech paths (receive and transmit paths) to generate a control output indicating "which of the two [speech] channels is to be activated" (page 1, lines 18-25). Transmit and receive attenuators are controlled and adjusted by a microprocessor after determining which channel is active, i.e., attenuation is increased in the passive channel and decreased in the active channel (page 1, lines 25-35 & 60-65). However, as also recognized by the Examiner, Odhams provides no teaching related to determining peak volume levels in the speech paths.

Karnowski, on the other hand, discloses improved switching in a half duplex speakerphone which is either in a transmit mode or in a receive mode according to the relative levels of the receive and transmit audio signals (col. 4, lines 25-31 & 49-54). In order to determine the mode of speakerphone operation, a peak detector determines the relative level of receive and transmit signals (col. 7, lines 11-19). A microprocessor controls the sampling and the peak detection, determines the mode (receive or transmit) and activates the attenuator in the active path while the attenuator in the inactive path is deactivated (col. 7, lines 30-50). Therefore, Karnowski provides no teaching related to a

duplex or full duplex speakerphone and is merely concerned with improved mode switching in a half duplex system.

We note that claim 1 recites a "duplex portable handset speakerphone" in the preamble and further requires that peak volume levels be determined and gain levels be adjusted in both speech paths in response to the determined peak volume levels. Although the preamble does not generally limit the claims, as the court has stated in DeGeorge v. Bernier, 768 F.2d 1318, 1322 n.3, 226 USPQ 758, 764 n.3 (Fed. Cir. 1985), "[A] claim preamble has the import that the claim as a whole suggests for it" and the preamble may be limiting "when the claim drafter chooses to use both the preamble and the body to define the subject matter of the claimed invention." Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995). See also Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989). Here, we find that the defining of the speakerphone in the preamble as "duplex" should be construed as limiting the claimed apparatus to a "duplex" or "full duplex"

system that allows the simultaneous activation of both receive and transmit channels.[2]

Based on the findings above, we remain unpersuaded by the Examiner's arguments that the combination of Odhams and Karnowski would have taught or suggested a duplex speakerphone that operates in both receive and transmit modes simultaneously. Both references provide for activating one of the receive or transmit channels based on determining the active channel or speech path by comparing the amplitude of the AC signal in each channel. Additionally, Karnowski's peak detection is used only for mode selection such that the attenuation in one of the transmit or receive channels is activated while the attenuation in the other channel is deactivated. Therefore, assuming, arguendo, that a proper reason for combining Odhams and Karnowski exists, the resultant combination would not have met the particular claimed limitations of a duplex speakerphone in which gain levels in both speech paths are adjusted in response to detected peak volume

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[2] In the communications art, the terms "duplex" and "full duplex" are synonyms and refer to data exchange or communication between two points in both directions simultaneously. See the following references (copies of which accompany this decision):

Fred Halsall, "Data Communications, Computer Networks and Open Systems," Fourth Edition, Addison-Wesley Publishing Company, p. 10, 1996.

Communications Standard Dictionary, Third Edition, Chapman & Hall, pp. 271, 384, 410 and 991, 1996.

levels. Accordingly, since the Examiner has failed to establish a prima facie case of obviousness, the 35 U.S.C. § 103 rejection of claim 1 over Odhams and Karnowski cannot be sustained.

We note that independent claims 2, 7, 24, 35 and 36, similar to claim 1, recite a duplex or full duplex speakerphone in which the gains of both speech paths are adjusted according to the detected peak volume levels. Based on our discussions related to independent claim 1 above, we find that the combination of Odhams and Karnowski falls short of teaching or suggesting the claimed subject matter of these independent claims and their dependent claims, which recite additional features. Therefore, we do not sustain the rejection of claims 2, 4, 7-9 and 24-37 under 35 U.S.C. § 103 over Odhams and Karnowski.

In regard to independent claim 20, the Examiner relies on the same description of prior art teachings and the reason for combining Odhams and Karnowski that were applied to claim 1, to assert unpatentability (answer, page 10). However, we disagree with Appellant's arguments (brief, page 12) that Odhams fails to teach comparing the stored noise threshold information with the detected peak signal level and adjusting the audio information that is above the noise threshold.

Before we begin our analysis of the Examiner's rejection, we note that the method of controlling an audio signal level of claim 20 is not limited to "duplex" or "full duplex" speakerphones. The claim merely requires a signal path, a microprocessor and a memory device which contains noise threshold information associated with an audio information signal in the signal path. The claim further requires "monitoring said audio information signal to determine a peak signal level for said audio information signal" and "comparing said peak signal level to said stored noise threshold information." The amplitude of the audio information signal is adjusted when "said amplitude is greater than said noise threshold information." Therefore, the method of claim 20 merely requires adjusting the amplitude of the audio information in a speech path when the detected peak signal level for the audio information is greater than the stored noise threshold.

Based on further review of Odhams, we find that the reference teaches measurement and manipulation of transmit noise level TNL, which is used to increase the value of upper threshold UT for the transmit signal, such that the attenuation and activation of the transmit channel occurs only when the required signal threshold is above the noise level (page 2, lines 48-60).

Odhams further teaches that the value of noise threshold TNL is derived from the measurements of signals in the transmit path and the related calculations performed by the processor. The noise threshold value is then stored before it is used for determining the upper threshold of the transmit signal (Page 2, lines 61-65). With respect to claims 22 and 23, which depend from claim 20, we also find that both Odhams (page 1, lines 59-66) and Karnowski (col. 7, lines 27-36) teach a microprocessor controlled by an algorithm for monitoring, comparing and adjusting programmable attenuators. Regarding the audio register, as recited in claim 21, Karnowski further provides for registers that store and manipulate receive peak value RX and transmit peak value TX of the audio information signal as provided by the peak detector (col. 8, lines 30-58).

Although we did not have to reach the issue of motivation in our decision with respect to claim 1 above, we find that one of ordinary skill in the art would have found it obvious to combine the teaching of Odhams with the peak signal level detection of Karnowski to arrive at Appellant's claim 20. Karnowski describes the problems associated with conventional speakerphones, such as the speakerphone of Odhams, in which one of the receive and transmit modes is selected as the active mode by comparing the

relative levels of the transmit and receive signals (col. 2, lines 15-26). To improve the oscillation between transmit and receive modes as well as avoiding the problems of fast switching and "chopping" effect, Karnowski discloses peak level detection of the audio signal which enables the microprocessor to determine which speech path (channel) is active and to digitally control the attenuators in each path (col. 2, lines 27-51). Therefore, as stated by the Examiner (answer, pages 5 & 9), one of ordinary skill in the art would have combined Karnowski's audio signal peak detection with the speakerphone of Odhams which attenuates the transmit signal when the required threshold is above the noise level to improve oscillation between the receive and transmit modes.

Based on our findings related to Odhams and Karnowski and the analysis made above, we find that the Examiner has established a prima facie case of obviousness with respect to claims 20-23. Therefore, the Examiner's 35 U.S.C. § 103 rejection of claims 20-23 over Odhams in view of Karnowski is sustained.

CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 2, 4, 7-9 and 24-37 is reversed, but affirmed with respect to claims 20-23.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOSEPH L. DIXON
Administrative Patent Judge

ANITA PELLMAN GROSS
Administrative Patent Judge

MAHSHID D. SAADAT
Administrative Patent Judge

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